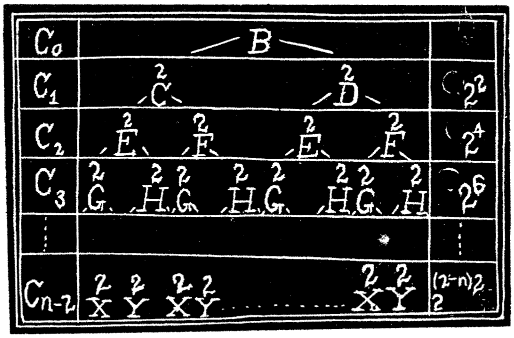
5. As there are $2^2(n-1)(n-2)$ different arcs on c_0, the total number x of polygons is

$$2^2(n-1)(n-2)(n-3)!2^{2n-3},$$

$$\text{or } x=(n-1)!2^{2n-1}.$$



6. To find the total number of all possible spherical polygons that may be formed by arcs of n great circles, it is clear that there will be $(r-1)!2^{2r-1}$ polygons of r sides, and consequently

$$\sum_{r=3}^{r=n}[{}^nC_r.(r-1)!2^{2r-1}]$$

will be the number of all possible polygons.

7. *Examples.* With three great circles on a sphere $(3-1)!2^{6-1}=64$ triangles may be formed. The number of spherical triangles and quadrangles which may be formed by four great circles is

$$(4-1)!2^{8-1}+{}^4C_3.(3-1)!2^{6-1}=768+4.64=1024.$$

PROBLEMS FOR SOLUTION.

ALGEBRA.

226. Proposed by ELMER SCHUYLER, Brooklyn, N. Y.

Find the real roots of the system

$$x^2+w^2+v^2=a^2,\quad vw+u(y+z)=bc,$$
$$w^2+y^2+u^2=b^2,\quad wu+v(z+x)=ca,$$
$$v^2+u^2+z^2=c^2,\quad uv+w(x+y)=ab.$$

227. Proposed by G. I. HOPKINS, A. M., Manchester, N. H.

Solve $x+y+xy+x^2y+xy^2+x^3y+2x^2y^2+xy^3+x^3y^2+x^2y^3=11$; $x^4y+3x^3y^2+3x^2y^3+2x^4y^2+4x^2y^3+2x^2y^4+4x^4y^3+4x^3y^4+xy^4+x^5y^2+x^5y^3+2x^4y^4+x^2y^5+x^3y^5=30$.

GEOMETRY.

251. Proposed by R. D. CARMICHAEL, Hartselle, Ala.

Represent the vertices of any regular polygon by the consecutive numbers 1, 2.....p.....q.....r.....n. To find the sides and area of the triangle formed by joining p, q, and r.